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Restful Burial Grounds.

TWO articles published recently in these columns call attention to the charm of burial grounds where the attention is not distracted by decorations inappropriate to the scene, and the writer commends the Walnut Hills Cemetery, in Brookline, Massachusetts, and the Quaker burial grounds for their absence of showy adornment and monumental display.

We have already stated that it is the effort of superintendents and trustees of burial grounds to so dispose them that there may be a certain unity of design in their arrangement, and to make the parts subordinate to an agreeable whole; but there is a difficulty in reconciling the public to any interference with what seems an individual privilege, and it is hard to make people realize that what is of great significance to them may be a fatal blot in the whole picture as it presents itself to the general eye. But the education of taste goes on imperceptibly; given the canon, and in time it will commend itself to all; though the general instinct now is that every one has a right to express his sense of loss and his recognition of the value of the departed in such fashion as may seem to him appropriate. But, as in crowded grave-yards, the lack of beauty becomes more apparent as the work of the stone-cutter overpowers the work of nature, and this shows that somewhere a halt must be cried to personal fancy, and an endeavor made to introduce permanent beauty.

Those who remember the great cemeteries near our larger cities as they were fifty years ago, when their fine natural advantages of hill and dale, of wide outlook, or shadowy recess, were only here and there interrupted by grave-stones, and contrast them with their present aspect of closely crowded iron and marble, must regret that some controlling taste did not long ago intervene to preserve all that beauty by insisting upon monuments so small and unobtrusive that the trees and natural loveliness of glade and elevation would still be the most apparent features of the spot rather than painful rows of glaring marble, often violent in design and imperfect in execution, or masses of flowers and colored leaves that are more curious than beautiful and appropriate. To this degree of taste people must be educated, and their expression of ornament controlled until they arrive themselves at the point where their own understanding commends a chaste and simple record of the departed in lieu of striking monument or elaborate inscription. What men like is a sure test of their æsthetic development and refinement, but even the artistic sense is the result of long and careful training and of constantly reiterated precept and of carefully studied example.

Since a cemetery must of necessity be conventional, as few monuments or grave-stones depart from some well-known and often repeated pattern, it seems right that such conventionality should be subordinate to a general plan which should combine all detail in one fair and noble conception of satisfying and restful beauty; so that a burial ground ought to be endeared to us, not only by the memory of those who sleep there, but by the grand groups of trees, the well-considered arrangements of shrubs and flowers appropriate to the scene, which would give to the whole ground a dignity and impressiveness forever to be associated in men's minds with those they have loved and lost. With the consciousness that years will increase and not detract from the beauty of the hallowed spot, affectionate thoughts can cluster around that serene resting-place, and draw us thither more and more willingly. For such a result canons of taste are imperatively necessary, and a few simple ones at least may be laid down for the guidance of those who earnestly desire to know what is truly befitting for so dear a spot.

In the first place it is admitted that no visible boundaries should be permitted between the lots, neither fences, nor hedges, nor copings of stone or marble, nor should the place where the dead lie be indicated by a mound.

A simple and artistic stone, ample enough for such inscription as is required, should be provided; but no tall conspicuous monument nor massive sarcophagus should be admitted, and it would be well if marble should be wholly excluded, as its keen whiteness is a constant shock to the eye, and always fails to blend harmoniously with surrounding verdure. Such shrubs and flowers as would be grouped here ought to be so disposed as to conduce to unity and breadth of effect. No individual desire to plant a rose-bush here, a willow there, should be permitted to interfere with a design which is not for the one but for the many, an effort to create one large and lovely dwelling for the dead, rather than a series of unlovely patches unrelated in design and ruinous to the general beauty of the scene by their lack of harmony with one another. It was this character of unobtrusiveness that inspired Gray's Elegy. The quiet graves where "the rude forefathers of the hamlet sleep" are destitute of stately monument. We can see the gray church with its clustering sunken stones about it today and realize the tranquil charm of that peaceful old churchyard, which needs no shining cenotaph nor glowing beds of flowers to make it live forever in our memory.

Restfulness and peace. What else do we need in our last home? Shall not the fresh flowers strewn by some loving hand upon our lowly couch be the best token we are unforgotten? Why, then, should our final sleeping-place be pranked out with marble and gaudy show of blossom? Rather let some quiet gray stone indicate our resting-place, and evergreen ivy drape it with its sombre leaflets, while over all may arch the boughs of ancient trees that shall bestrew it in spring with blossoms, and in autumn with the soft covering of its falling leaves. The reason for simplicity in burial places is obvious. It is not here that the memory of the wise and good is to be preserved. That lives in the minds of men. Here lies the common dust of which we all are made, and to which we are to return. Death, the great leveler, here makes an end of our pretences; before the Destroyer all are alike. Let,

then, the record be humble, since to this lot we come at last. All now are equals before the King, and efforts to maintain the distinction between lofty and lowly may well be dispensed with on our tombstones.

In a recent issue of this paper we spoke of the work of Messrs. Olmsted & Co. at the Columbian Fair, at Chicago, in connection with that of the architects to illustrate the true function of landscape-gardening or of landscape-architecture, as many members of that profession prefer to style it. We tried to show that very often the planting of trees, shrubs and flowers was a comparatively insignificant matter, a minor detail of a general design which is meant primarily to solve in a matter-of-fact way serious problems relating to comfort, health and convenience, problems of every-day practical and economical moment as well as questions of exterior appearance and adornment. Of course no one is competent to give advice on subjects of such vital importance to the owners of private grounds or to the people who make use of public grounds, without careful training. As we have pointed out, the profession deserves to rank with architecture among the arts of design, that it means something deeper than the making of pretty pictures on the grass, that the questions to answer are so weighty that no one has a right to assume the responsibility of facing them who has not added to an original aptitude and a correct natural taste the expert ability that comes from long and careful study. And yet there is danger that, as the value of counsel in this direction comes to be more generally recognized, there will be no lack of unskilled persons ready to call themselves landscape-gardeners, and to work untold harm upon confiding clients.

Not long ago a large sum of money was voted in one of our flourishing cities for establishing a park, and the regular administrative body who had the matter in charge promptly selected the foreman of a neighboring florist's establishment to make the design because he offered to do it cheaply. There was no question among these trustees as to his capability, because it was assumed that a man who knew all about the refinements of floriculture was master of the coarser work of "laying out grounds." A little reflection ought to have convinced these commissioners that a good design is always the cheapest; that even in this lower view of the matter the fee of a trained artist will always be saved many times over in the work of construction alone, while, after the plans have been carried out, the park will be constantly growing in beauty and usefulness as the years roll on. A plan which does not take advantage of all the possibilities of the situation and adapt them to the special needs of the city will be a disappointment at the outset. This means that the designer should be a man of wide intelligence and foresight as well as an artist in the highest sense of the term. An imperfect design will be a disappointment at the outset, and it will bring about an endless series of makeshift revisions and patchwork amendments, and, in a word, will be a costly failure. And yet there is no security now against the repetition of such mistakes.

In this profession, as in others, education must ultimately come through the improved taste of the people at large. Public works and private places will be at the mercy of journeymen until it is recognized that it is a fine art to design a park or to make the proper adjustment between a private dwelling and its surroundings so that the aspect and outlook of the house, its situation and its approaches and all its relations to the grounds shall be consistent, practical and in accord with the highest canons of taste. Even then there will be incompetent designers in this profession, just as there are architects who constantly sin against the very foundation principles on which true art rests. But the popular taste improves as good buildings are furnished for observation and comment; and popular taste in landscape-art will in time be educated, let us hope, until there will be no place for quacks or pretenders in the profession.

Meantime it is the duty of every one who seeks professional advice in this direction to employ only those who have credentials which guarantee their competency.

A Corner in Pines.

THE planting of a bit of woodland teaches a great many virtues, but perhaps its most obvious lesson is that of patience, which it sometimes unexpectedly rewards just when one's expectations have been finally resigned as vain delusions. Such a reward and delight was ours in the result of a broadcast sowing of Pine-seeds in the autumn of 1888, so, for the comfort and cheer of those who may be downhearted about their own apparent failures, I wish to record the story of a final success.

When we started out to reclaim the worn-out old pasture on the hill at Overlea we set out a great many little evergreen trees of different sizes, a fair proportion of which survive in a vigorous condition, the smaller ones, planted when a foot high, being altogether the most satisfactory in percentage of survival. But Pines are queer; there is no denying that. Sometimes, when a tall weedy one was brought home, there were many jibes from the head of the family upon the folly of expecting such a specimen to stand the weather even for one season, while the merits of a stout, stocky, burly bush were highly extolled as a promising contrast. But now and then the burly bush succumbed, while the thin weedy tree pulled through, very much like some of those scrawny and tall New Englanders, who, though looking as if a high wind would blow them away, prove to possess a tough and staying quality which nothing in their looks presages.

Now, having had it affirmed as a fact that a hundred Pine-trees to the acre were enough if they all grew, nothing would really satisfy us but to put in a thousand to start with on about an acre and a quarter of stubborn soil. That is the true American spirit—a desire to overdo. Now, the master, having not much confidence in the methods of the mistress of this farm, concluded in true scientific spirit to begin at the beginning, and plant Pine-seed by the bushel, as the easiest and most thorough way of producing thousands of trees in a wood-lot. It was in vain to quote to this opinionated person books on forestry, which stated that the results of sowing seed in the reforestization of France and Switzerland had proved less successful than planting of young trees; he was satisfied, like Sam Patch, that some things could be done as well as others, and that it was no reason at all that because seed was unsatisfactory in the effete countries of the Old World that it would not behave with perfect propriety in the more vigorous and self-respecting climate of Massachusetts, where all the hardy trees and virtues manage to get proper nourishment out of the most forbidding conditions. Therefore, furnishing himself with a barrel of Pine-cones, the doctor went ahead with his experiment.

It was quite a job to shell the seeds, but the factotum found time for this on rainy days in the late autumn, and when the light snow fell the sower went forth to sow, before the resin had time to harden in the seeds and interfere with their fructification. This part of the job accomplished, there was nothing to do but wait for Nature to do her part in furthering the experiment.

Spring came. Up popped little Oaks and Maples and Walnuts and Chestnuts that had been freely planted at the same time as the evergreens, but not a Pine condescended to appear. All through the summer belated nuts were putting in a tardy appearance, but still no Pines. Birds and field-mice were supposed to have devoured them, and we dismissed them from our minds.

A year elapsed. A few unhappy little Pines poked up their heads in sheltered holes, six or seven of them huddled together. We paid them frequent visits, encouraged them to live, piled sods about them to shade their poor little spines, but under an August sun in a very dry summer they withered away. By last year (1891) most of them had disappeared, and there was some scoffing on my part and quotation of authorities to emphasize the fact that Pine-sowing was no good, which the experimenter bore with becoming meekness, while counseling me to wait. But this I concluded was only by way of argument, and because no man likes to admit that he can be beaten by the forces of nature—namely, birds and field-mice.

But in this year of grace, 1892, lo! a miracle took place! When the March winds had ceased to blow and the snow had melted, so that we could walk abroad over the uncut brown grass upon the hill, what should we spy peering up beside the

withered Golden-rod stalks and the ghost of last year's Daisies but thousands of six-inch Pines, rearing their gallant little heads, undaunted by the weather, and evidently come to stay. We hailed them with shouts of delight—here a clump, there a single one, crowding closely in the mossy springy places, more scattered where the soil was thin; but unmistakably there, after all these years of waiting, evidently quite at home, having hidden themselves in the long grass of the preceding summer, while they had been sending down roots so far that when we try to separate some of the denser groups it is really hard to dig them up with a trowel without injuring their fibres.

My scientific companion magnanimously forbore to triumph; indeed, the proud result was as unexpected to him as to me, and was so gratifying that he could afford to accept it with quiet satisfaction.

Some of these little trees, in a spot sheltered from the north-east wind by a clump of tall Birches, have attained respectable proportions, so that we ventured to move them into separate holes. Though taken up on a cool evening with a ball of earth, and apparently no disturbance of their roots, the perverse things wilt and hang down their heads as if they were ready to misbehave, which they have no excuse for doing. On one evening we moved twenty-five very little ones, which all grew in one hole, and most of them bore it very amiably, though some of them perished. As these would have died any way, if left alone in the struggle for the survival of the fittest in that little space, we bore their loss as well as we could, though I must admit that your true planter cannot see the death of one seedling with indifference, which gives a new meaning to the text that "not a sparrow falleth to the ground without His knowledge." If he who plants mourns the failure of one tiny seed, it helps to the understanding of the Creator's interest in all the creatures into which He has breathed the breath of life, for, after all, those of us who struggle to bring to birth or to keep in existence some germ of vegetation approach the great mysteries of being, and feel that we have a hand in it.

Our corner in Pines teaches us a brave lesson. Our joy in our little wood-lot, with its fairy trees, is the greater for being long delayed. What comes easily never has the zest of the pleasure that is waited for. We value a result by the difficulties of its achievement, the triumph of its success. An acre of unsown Daisies is a trial, while a square foot of planted Pines is a satisfaction, showing that a longed-for and slowly reached result is in itself a reward. Our Pines represent the achievement of birth after long and almost hopeless waiting. It is not so much the thought of the majestic forest that consoles as the assured fact that the unstayable seed has started and that it has a future before it. Under the old tree we sit and look back; it represents shelter and repose and peaceful satisfaction. Beside the seedling in its various stages we stand and watch; in it is hope, a future, a long look forward. Age and youth; in each an interest and a joy. In one the delight of fruition, in the other the splendid promise of birth and growth. In the establishment of a tree for coming generations there is an unselfish delight. It is not our own reward we seek, but we lend ourselves to the great forward movement of life, and in that creative instinct feel ourselves elevated and enlarged, at one with mighty forces which we cannot understand, but of which we can avail ourselves by directing their vivifying course.

It is this linking of the humblest with the greatest that lifts existence above the commonplace; that gives to the philosopher, the poet and the artist an ever new meaning and joy in the common things of the earth, which, to him who reads aright, are fraught with significance. To the thinker, as to the poet, the simplest things serve as types which represent the infinite; to them the humble is the high, the microscope as inspiring as the telescope, since each reveals new worlds to the imagination. The seed contains the germ of the tree. One Pine-cone in time will produce a forest, for the progression is geometrical. One acre of ground faithfully studied gives one the key to the problem of the universe; helps to a recognition of the miracle of creation, and, rightly valued, affords perpetual food for the intelligence, while supplying the body with lively exercise.

From our corner in Pines we win hope, amusement and patience. It opens for us a window into the future and an outlook into the immensities; it links us with a hereafter we shall not live to see; with a generation by whom our names shall be forgotten, and proves to us the truth of that vision of the poet, in which he sees that

> The whole round earth is every way
> Bound by gold chains about the feet of God.

Hingham, Mass. *M. C. Robbins.*

The Great Elm at Derby Line.

THE Elm figured on page 307 is doubtless the largest tree in Orleans County, Vermont, if not in all the north-eastern part of the state. It is, unquestionably, a tree of the original forest; and it was, to the eye, nearly as large in all its dimensions when the region was first settled, in the early part of the present century, as now. Its height, by careful measurement, is 102 feet. Three feet from the ground its circumference is exactly twenty feet, while at five feet it is eighteen feet and two inches. Its comparatively small head is probably due to the fact that it grew in a close forest and had no opportunity to spread.

It stands close to the highway, which is also the main street of the village of Derby Line—so named because this street extends to the international boundary line between the United States and Canada, and is continuous with the main streets of Rock Island and Stanstead, Canada. Rock Island is situated upon an island in the Tomefobi River, which is almost exactly on the line at this point, and Stanstead Plain is a village closely adjacent on the north bank. The whole territory for fifty miles around consists of the finest agricultural land. On the Canadian side it is known as the Eastern Townships, in large part settled by New Englanders, who, before the line was strictly defined, "made their pitches" without much regard to where their citizenship and allegiance might fall. In addition to this Yankee element there was a large introduction of English immigrants, mostly soldiers from the disbanded armies of Great Britain after the final overthrow of Napoleon I. There is only a moderate intermixture of the French Canadian element in this part of Canada, and its principal town, Sherbrooke, now a city of some 12,000 people, is substantially of British antecedents and environment.

All this region (as also the valley of the great St. John River, in northern Maine and New Brunswick) consists of what is known as "hard-wood land," although, of course, with much mixture of Pine, Spruce, Fir, Hemlock and White Cedar (Arbor-vitæ). It is a rolling, well-watered section, the chief rivers on the Canadian side—the St. Francis and Chandière, with their tributaries—and many lakes, large and small, leaving the traveler through it not often out of the sight of water. Altogether it is a pleasant land, peopled by an excellent class of farmers, with a considerable manufacturing element on both sides of the line. The vigorous growth and great size of the trees testify to the fertility of the soil, and for general farming, it and its continuation eastward constitute decidedly the best portions of the great peninsula lying east of the Hudson River and Lake Champlain.

Newport, Vt. *T. H. Hoskins.*

Plant Notes.

Some Recent Portraits.

IN the June issue of *The Botanical Magazine* are portraits of Althæa ficifolia (t. 7237), a native of south-eastern Europe and the Levant, a handsome Hollyhock, long known in cultivation, differing principally from the well-known Althæa rosea in the narrow lobing of the leaves, an uncertain character hardly to be depended on to distinguish the species. As a weed of cultivation this plant extends from Persia to Siberia, southern Russia, Servia, and Egypt, and is believed to have originated in north-western Persia. It varies from a few inches to five feet in height, while the flowers vary in color from pale yellow to purple. Eria marginata (t. 7238), a little-known Orchid originally described from a solitary specimen believed to have been introduced from Burmah. It belongs to the small section Hymenolæna, with cylindric or clavate stems, a few subterminal leaves, short peduncles, and large colored bracts. Sir Joseph Hooker points out its relationship to the Kahasian Eria clavicaulis, which has a small rounded mid-lobe of the lip margined with purple, and to the Ceylon Eria Lindleyii, of which the lateral lobes of the lip reach almost the same length as the terminal. It is a small-flowered plant of no great beauty, with white sepals and petals and a lip bordered with red, the middle lobe being light orange color. Senecio Galpini (t. 7239), a native of the Transvaal Republic and a rather showy succulent plant with pale leaves and dark orange flowers in dense heads. Porana paniculata (t. 7240), a member of the Convolvulus family and a native of the East Indies, with small light yellow

flowers in dense compound cymes, in the hot Himalayan valleys climbing over trees to a height of upward of forty feet, and sending down showers of pendulous flowering branches from above; it is described as one of the smallest flowering species of the genus, differing from its congeners in the short style and solid stigma. Eight species of Porana are known in India and are spoken of as the most beautiful hedge-plants of that country; two of them are particularly abundant—the species here figured, which abounds from the base of the Himalaya throughout its length to Ceylon and Burmah, reappearing in Java, and Porana racemosa, the "Snow Creeper" of Anglo-Indians, a plant confined to the Himalaya slopes, where its masses of dazzling white flowers recall patches of snow. Porana grandiflora ascends to eight thousand feet in the Sikkim Himalaya and produces mauve flowers an inch in length. Rosa pomifera (t. 7241), a handsome species distinguished by its large succulent fruit from which it has been cultivated from time immemorial.

Begonia Haageana is handsomely figured in *The Garden* of June 4th. This is a beautiful perennial, perpetual-flowering Begonia introduced a few years ago from Brazil by the nurseryman of Erfurt in Germany, whose name it bears. It is described as one of the most magnificent of the many Begonias known and to be as easily cultivated as a Coleus. At Kew there are specimens four feet high and nearly three feet through, clothed with leaves from top to bottom, and covered with flowers, although the largest heads of bloom are produced in autumn, when they sometimes measure a foot in diameter. The male and female flowers are usually borne on separate cymes and are remarkable from the fact that the females do not fall off but remain on the plant until they become green even although not fertilized. This will probably be found one of the most useful of all the winter-flowering Begonias, and its early introduction into the gardens of the United States is certainly desirable.

In the sixteenth number of the American edition of *Lindenia*, Monsieur Linden's magnificent Iconography of Orchids, are figures of Eulophiella Elisabethæ, an interesting plant with the general habit of a Catasetum or of a Eulophia, but which, from the peculiar structure of the flower, is considered the type of a new genus. The stout pseudo-bulbs produce four lanceolate leaves attenuated below into slender petioles and nearly two feet in length with prominent veins. From the base of the pseudo-bulb the scape rises to the height of nearly a foot, and like the fleshy concave bracts and pedicels is a deep vinous purple, making a handsome contrast with the white flowers with broad spreading segments, which form a nearly complete circle. The generic name of this interesting plant serves to indicate the resemblance to Eulophia and also the presence of the peculiar conspicuous crest. The species is dedicated to Queen Elizabeth of Roumania, and was introduced by the Horticulture Internationale of Brussels, where it has recently flowered. The native country is not divulged, although we are told it should be grown in a warm house and that it will succeed under the treatment needed for Phajus, Eulophia and Cyrtopodium.

There are also figured in this issue Phajus tuberculosus, a beautiful Madagascar species, which in recent years has excited the admiration of Orchid-growers; Cypripedium exul, var. Ilschootianum, a plant at first supposed to be a variety of Cypripedium insigne, to which it bears, in the general form and color of the flowers, a remarkable resemblance, although it differs from that species in its erect, not spreading, leaves; and Peristeria Lindeni, a remarkable and striking species with short racemes of almost globular flowers with light green sepals and petals suffused with dull purple, and covered throughout with deep dark purple spots, the lip being margined and striated underneath with the same color on a pale ground. This very striking and interesting plant is a native of tropical America, whence it was introduced by the Messrs. Linden.

New or Little-known Plants.

Hypericum opacum.

AMONG the American Hypericums are several species which commend themselves to the attention of gardeners. The species are all dwarf shrubs with deciduous leaves, and produce an abundance of showy yellow flowers from midsummer to early autumn—that is at a time of the year when few shrubs are in flower.

We have, from time to time, published portraits of several species, which, curiously enough, are little known except to professional botanists, and in the present issue another species is figured (page 305). It is the Hypericum opacum of Gray, a southern plant, with a range from South Carolina to Tennessee and to Florida and Mississippi, and produces erect slender stems one to four feet high, covered with light red exfoliating bark and corymbosely branched toward the summit. The leaves are closely sessile, linear-oblong, obtuse, pellucid punctate with crowded dots, an inch or an inch and a half long and a quarter of an inch broad. The flowers, which appear in nearly naked divaricate cymes, are rather less than half an inch in diameter. The seed-pod is ovate and a quarter of an inch long, and the seeds are oblong and minutely pitted.

Hypericum opacum is less hardy at the north than many of the other species; it will, of course, flourish in the gardens of the southern states, and may be expected to thrive as far north as the neighborhood of this city. *C. S. S.*

Foreign Correspondence.

Knap Hill Nursery.

THIS nursery is famous the world over for its Rhododendrons and hardy Azaleas, and Mr. Anthony Waterer, its venerable proprietor, is one of England's most noted gardeners. To see the Rhododendrons and allied plants in the Knap Hill nursery in June, with Mr. Waterer for a guide, is to enjoy one of the most magnificent floral displays it is possible to conceive, and to hear a great deal of exceptionally interesting information about them. "The Knap Hill nursery is the most extensive, as it is the oldest, establishment in England in which the cultivation of American plants has been made a specialty. Its extent exceeds 200 acres, of which more than 60 acres are allotted to the cultivation of American plants. The beds and borders devoted to this class of plant extend over miles in length and contain the largest quantity of the finest plants to be met with in this country or in Europe." This is word for word what Mr. Waterer says in his plant catalogue, and it is a modest enough description to any one who has seen Knap Hill. The nursery is well situated in regard to soil and water, and the position, though bleak, is fortunate in the surrounding scenery, which is of the delightful Surrey hills and dales. Running straight through the nursery there is a very long carriage-drive connecting two public roads, and this drive Mr. Waterer generously permits the public to use, with certain reservations as to dogs, etc. Thousands of people go every year to Knap Hill to see the wonderful display made by the Rhododendrons and Azaleas. Whit-Monday is quite a gala day, the crowd being so great that the workmen of the nursery have to act as patrols to keep the visitors in order. To understand all this one must see the plants for himself. I had no idea that the display was so magnificent, and I do not expect to succeed in conveying to others anything like a fair idea of this wonderful collection of outdoor plants. There are masses of Rhododendrons, Azaleas and other similar plants in other nurseries, in public gardens and parks, and in private establishments, but they are insignificant when compared with the Knap Hill collection. Of course, when it is remembered that these plants have been a specialty in this nursery for more than a century, that the best varieties have nearly all been raised there, and that the Waterers have always been

what is called Rhododendron mad, the extent and interest of the collection are to some degree accounted for. Mr. Waterer is a conscientious breeder; he will have nothing to do with plants of inferior quality. "I like a Rhododendron or Azalea flower to look me in the face, to spread out its petals, and to pack in the truss so that it never flops about in rain or wind. It must have good leaves too, be fit to look at when out of flower, and be absolutely hardy. We send no plants out of this nursery that do not fulfill these requirements." When asked what kinds did best in colder regions, for instance, in the northern states of America, Mr. Waterer replied that he bred only from R. Catawbiense for America, and that he would never recommend the tenderer sorts for that country. But, he exclaimed, "they know all about my Rhododendrons and Azaleas too, for we send thousands to the Americans every year."

Fig. 54.—Hypericum opacum.—See page 304.

Mr. Waterer has annually large exhibitions of Rhododendrons in the gardens of the Royal Botanical Society at Regent's Park, and in Hyde Park near Rotten Row. These latter I saw a few days ago, and exceedingly attractive they were. Some of the specimens were enormous, one of the rich blood-red flowered Michael Waterer being a truly wonderful picture. It was nine feet by nine feet, and literally crowded from top to bottom with huge trusses of flowers which almost dazzled the eye. But there are better things than this even to be described in the nursery.

The Azaleas are grown in hundreds of thousands, from young plants flowering for the first time to huge specimens almost as large as a haystack. Colors of every shade, from white to orange and crimson, some variegated, some self-colored, some of dazzling brilliancy, others delicate, but all lovely. Flowers as large as those of Azalea Indica were plentiful among the more recent seedlings. Later-flowering varieties than the old Calendulacea family have been raised chiefly from A. occidentalis, and are being rapidly propagated by Mr. Waterer. They flower fully three weeks later than the older kinds. The parent of all Mr. Waterer's red-flowered seedlings is what he calls A. coccinea; really, I suppose, a form of A. calendulacea with deep red flowers. There are several magnificent bushes, the originals of this variety, at Knap Hill. None of these Azaleas are grafted; they are mostly raised from layers or seeds. Many of the colors appear to come fairly true from seeds. In England, at any rate, we do not use these grand Azaleas nearly as extensively in gardens as they should be used. If Mr. Waterer had done nothing else, his work in improving and diversifying the American Azaleas would certainly prove a lasting monument to him.

A. Sinensis (mollis) is also receiving special attention at Knap Hill. As a flowering plant it is as fine as the very best of the American kinds, and in England, at any rate, it is perfectly hardy. Already Mr. Waterer has obtained varieties with blood-red flowers. I consider this Azalea one of the very best garden-plants in the genus. Very queer, yet promising, crosses have been made at Knap Hill, of which, however, I may not say more than that they are likely to add to the fame of the Knap Hill establishment.

The Rhododendrons take one's breath away. Is there any genus in the whole vegetable kingdom to which gardens are so much indebted as to Rhododendrons? Outside, in the greenhouse, the intermediate house, and even in the stove, we have them, and they are almost every one beautiful. But if this is true with regard to species, what might one say of the hundreds of splendid crosses which we now possess? I was ignorant of the endless variety of color, beauty of form and grand character generally of the hardy Rhododendrons until I saw them the other day at Knap Hill. Almost every color, even to blue and almost to black, is represented. But to see what these plants are capable of, one must behold them when grown into huge bushes and covered with trusses of flowers. Of course, the soil at Knap Hill exactly suits Rhododendrons; the plants there attain a perfection which it is hopeless to expect in less

suitable soils or within range of the smoke of large towns. But these plants are not dear, even if one has to renew them every few years. We do not hesitate to spend fifty pounds in the purchase of Tulips and Hyacinths for a week or two's display in spring, and this sum laid out in Rhododendrons would produce something at least equally as attractive and lasting. But, as Mr. Waterer says, Rhododendrons and Azaleas will succeed in almost any soil that does not contain lime or chalk, and in many sandy loams they grow with as much vigor and luxuriance as they do in peat.

I set down the names of the Rhododendrons which I saw and thought excellent. They were as follows: White, Rosalie Seidel, Sappho, Mrs. S. Simpson, Mrs. J. Clutton, The Queen; rose or lilac, Everestiana, Marchioness of Lansdowne, Lady C. Mitford, Alexander Dancer, Lady Grey Egerton, Stella; scarlet, J. Mackintosh, Mrs. Shuttleworth, E. S. Rand, M. H. Sutton, Doncaster, J. M. Brooks; crimson or purple, Cetewayo, Melton, G. Paul, John Walter, Sigismund Rucker, Michael Waterer, Purpureum grandiflorum, King of the Purples, C. S. Sargent, Sir Hugo. These are all sterling sorts, such as I would like to plant in quantity in a garden for myself. In a nursery where bad or inferior varieties are not cultivated it is almost superfluous to make selections. To stand on an elevation at one end of the nursery and look over the whole extent of Rhododendrons is to see the full splendor of these plants, a splendor which, in my opinion, is unequaled even by the Rose.

The propagation of Rhododendrons is partly from layers and partly by grafting, the former, although slower, being preferred by Mr. Waterer on account of the suckers which grafted plants are almost certain to develop to the injury and even destruction of the cion. The renovation of sickly or worn-out specimens by cutting them in hard, and sometime by grafting better sorts upon them, was described and shown to us by the young Mr. Anthony Waterer, who is as keen a grower and admirer of American plants as his father.

In June everything at Knap Hill is eclipsed by the Rhododendrons and Azaleas, but if one can afford the time an inspection of the other plants in the nursery is of more than ordinary interest. Nothing but what is good, and almost everything in fine health and form among Coniferæ, forest-trees, ornamental trees and shrubs, and even herbaceous plants may be seen here as one rarely sees them. I noted variegated Turkey Oak, Double White Thorn, Weeping Thorn, Adrus atlantica glauca, a beautiful Laburnum called Waterer's, remarkable for length of raceme and color; a huge tree of the Golden-yellow Chestnut; another of the Crested Beech, and one of the evergreen F. antarctica; a Weeping Beech, thirty feet by sixty feet, which is said to be only about sixty years old, and is one of the most wonderful trees in the nursery. Thousands of the Blue Spruce (Picea pungens glauca), of Golden Yews, Cypresses, and many other conifers; Acer Worleyi, with rich bronzy leaves; Alnus Van Houttei, yellow; a fine deep-colored red Horse-chestnut, called Æsculus rubicunda rosea Brioti; the silvery Pyrus sorbus, var. lutescens; grand forms of Cydonia Japonica; Weeping Purple Beeches, and very fine Hollies. I might run through almost the whole of the numerous plants enumerated in Mr. Waterer's catalogue, and state that all were first-rate. A form of Spiræa Bumalda, called the Knap Hill Scarlet, is one of Mr. Waterer's new plants with a promising future. It has scarlet flowers in large compact heads, and blooms from July until destroyed by frost. Old, and in some cases unique, specimens of many trees are scattered about over the nursery, and impart to the place an appearance unusual in trade establishments. The preparation of the plants for removal is done systematically and thoroughly, so that large specimens can be transferred to other gardens without much danger of failure. Some of the best of our newer gardens have been planted with material supplied from Knap Hill. The garden at Waddesdon Manor, the residence of Baron F. de Rothschild, considered by competent judges one of the best gardens in England, was stocked principally by Mr. Waterer.

London. *Visitor.*

Cultural Department.

Iron-clad Stocks—The Graft-box Fungus.

I AM much pleased to find that my proposal to employ iron-clad seedlings as stocks for budding or grafting tree-fruits for the cold north meets with the endorsement of Professor Budd, of the Iowa Agricultural College, who has made a special study of the best methods of propagating fruit-trees in the north-west, and who is a well-known experimenter with the so-called Russian varieties of fruit-trees. Referring to my remarks on this topic in a recent issue of Garden and Forest, Professor Budd says in *Rural Life:* "Beyond all doubt budded Apple-trees on hardy roots would prove more valuable than our ordinary piece-root grafts. In practice it would also be a source of gain to the nurseryman. Budded trees, when two years old, are larger and smoother than root-grafts three years old, and the number of culls among budded trees would be small—not one-tenth the number found among piece-root grafts where third cuts are used."

While defending piece-root grafting from what seemed to me unreasonable criticism, I have always opposed the use of third cuts, or even second cuts from small roots. But I shall hail with joy the laying away of this controversy by the adoption of a class of stocks which will allow of budding the iron-clads in place of grafting them. Heretofore this has been impracticable, because it brings the stock above ground, and unless the iron-clads budded on common stocks are planted out in the orchard so deeply as to well cover the point of union, the young trees are no hardier than their stocks.

In order, however, to obtain iron-clad seedlings fit for budding valuable market fruit must be used at a loss unless it is evaporated and the seed saved from the cores; and even this makes much more work in extracting the seed from the cores, compared with ordinary cider-mill seed. But at a dollar or two per pound such seed will be cheap for all nurserymen who are growing budded stock for planting where the thermometer goes down into the minus thirties and lower nearly every winter.

On the subject of the "graft-box fungus" Professor Budd advises keeping the grafts in a low temperature, even considerably below freezing; and a long experience has taught me that grafts so kept winter in fine condition, and grow strongly when planted out. So particular have I been about this matter that when I have had root-grafting done by others I have insisted that the grafts be made early in the winter, and sent to me as soon as made. A single neglect of this rule cost me the loss of a considerable lot of grafts of one of the new Russian Pears. When received from the grafter, early in April, they were nearly all started. Though very carefully put out, only a few grew, and of these none made a satisfactory growth or became merchantable.

The chief difficulty in wintering root-grafts, aside from temperature, arises from variations in the moisture of the packing. When fine sawdust direct from the green log is used, carefully packing it about and between the bundles of grafts, containing not more than one hundred each, the boxes closely covered and kept in a freezing temperature, the grafts will afterward be found in perfect order, and no sign of the fungus makes its appearance. This statement is based on an experience of more than twenty-five years. On the other hand, if the grafting is carelessly done, with unnecessary exposure of stock and cion to heating and drying influences, and then the completed grafts, in large open bundles, are packed loosely in a mixture of chopped straw and wet sawdust, and kept in an even moderately warm cellar, either the grafts will be attacked by the fungus, or they will become too dry, or their buds will swell and grow—any one of which occurrences is fatal to that vitality upon which, with careful planting, we must depend for a stand of marketable young nursery trees. On light soils particularly, but also on any soil suitable to the purpose, a vigorous growth of the grafts depends largely upon deep, careful and firm planting. One good bud above the surface is better than more. The soil should have been several years in tillage, deeply plowed, and abundantly and evenly enriched from the surface downward. In this way we get very fine trees from carefully made, kept, and planted root-grafts. But with good iron-clad stocks, still better results may be attained by budding.

Newport, Vt. *T. H. Hoskins.*

Choice Herbaceous Plants.

ST. BRUNO'S LILY, Anthericum liliastrum, is not only perfectly hardy in this locality, but it grows freely and produces an abundance of snowy white lily-like flowers. It is a first-class ornamental and useful plant, and deserves to be more generally grown. Perhaps one reason why it is not seen oftener is that those who grow it usually have but one specimen, and in this way it is never so effective as when grown in masses. To insure a good effect requires a clump at least two or three feet in diameter. A few days ago I saw such a group at a nursery near here, and the flowers showed to great advantage above the abundant foliage. The plants thrive best in a deep rich soil, and they are not particular whether they are placed in a partially shaded position or in full sun. I find that the plants somewhat shaded come into flower a little later than those which receive the full benefit of the sun. If we have plants both in sun and in shade a longer season is insured. This Anthericum is a native of the Alpine meadows of the south of Europe, and has been in cultivation since 1629. It grows about twenty inches high, and its leaves are about twelve inches long. The white flowers are fragrant, two inches long and about one and a half across, and on the point of each of the petals there is a small green spot. The flowers are produced in loose spikes, each spike bearing from six to twelve flowers. The variety of this plant called Major very closely resembles the type, but it is a stronger grower and has larger flowers, which are produced in profusion, and are very useful for cutting purposes. Both type and variety are propagated by division of the roots in the fall, or by seeds, which should be sown soon after they are collected. This plant is also known under the name Paradasia Liliastrum.

Fig. 53.—The Great Elm at Derby Line, Vermont.—See page 303.

The genus Heuchera is a small one, consisting of about twenty species of hardy perennials, and belongs to the Saxafraga family. They are all natives of temperate North America. The flowers of most of the species are neither showy nor orna-

mental, but they form compact tufts of foliage, which are rather pretty, and can be used to advantage under taller-growing subjects. Heuchera sanguinea is the best plant of the genus, and it has come to be ranked as one of our best perennials. It is a robust grower, perfectly hardy, and does not require any special treatment, growing freely either in the herbaceous border or in the rock-garden. When it is planted in a mass it gives a splendid effect. It is comparatively new, having been introduced into gardens from Mexico in 1882. It has a neat bushy habit, forming compact tufts of leaves close to the ground. The graceful flower-stems are produced abundantly, and are covered with deep red tubular flowers, which last for several weeks. The leaves are light green, slightly hairy, cordate, five to seven lobed, and these are again sharply crenated. It is easily increased from seed or by division of the crowns in spring.

The Alpine Aster (Aster Alpinus) has large bright purple flowers which are much admired. It is a neat and beautiful plant, growing from nine to twelve inches high. The flowers are produced singly on the stem and are about two inches across. This Aster is a very old inhabitant of gardens, having been in cultivation for over two centuries; and yet in some of our best collections of hardy plants it is not seen. It is not hard to grow if placed in good garden-soil where it can have plenty of light. It is an excellent plant for the rock-garden or the front row of the herbaceous border. After the flowering season it may be increased by division of the strong roots or by seed.

Several of the species of Campanula are just now conspicuous in the borders. Campanula persicifolia, with its large blue flowers, is very showy and making quite a feature where there are large masses planted. There are several varieties of this plant, such as Alba, Maxima and the double white, and all of them are good garden-plants. Campanula glomerata Daurica is a good plant, flowering annually with great profusion, and demanding little care or attention. It was brought from Siberia in 1825, and was thought then to be a new species, but was afterward reduced to the rank of a variety. It grows from fifteen to eighteen inches high and has large deep purple flowers, produced in dense heads. All these species and varieties are easily cultivated; they do well in a good, rich, open soil, and are increased by division of the plants either in the fall or spring.

Centranthus ruber is an old favorite and is covered just now with its red flowers. It belongs to the Valerian family and is sometimes called the Red Valerian. It is a native of the south of Europe and is naturalized in Great Britain. The plant attains a height of two feet here and is a little shrubby at the base of the stem. The individual flowers are very small, but they are produced in dense cymes forming a handsome corymbose panicle, and are very useful when cut, as they last for several days. There is a white variety of this plant which is quite pretty but does not come into flower as early as the species. This plant will grow in any sort of soil, but to get the largest and brightest flowers it needs a little manure. It is most readily propagated in the fall by division of the roots, great care being taken to preserve the long fleshy roots and to break or bruise them as little as possible.

The perennial Spiræas are just now among the best ornaments of the herbaceous border. Spiræa Aruncus is one of the tallest and most showy, growing to a height of four feet. Its habit and foliage are good, and its small white flowers are borne very freely on long spikes, forming a terminal panicle. It does well in the border or wild garden associated with the more vigorous perennials; but it requires to be planted in deep moist loam. It is a native plant, but is also found in Europe and Asia.

S. astilboides is another handsome perennial which is rather like S. Aruncus, but is much more dwarf and graceful. It grows about two feet high and its stems are furnished with triternate leaves and terminated by spicate panicles of white flowers. As a border or rock-garden plant it is unrivaled among the dwarf Spiræas. It is also very useful for forcing in spring, making a good pot-plant, growing freely and flowering profusely. It is a comparatively new plant and was brought from Japan a few years ago. The Dropwort or Spiræa filipendula is a European species and received its common name on account of its small tuberous roots hanging like drops by slender threads. There is a double form of this plant which is more common in gardens than the species. The flower-stems are about two feet long and all in loose panicles; the flowers are white and are very useful for cutting. The foliage is very pretty and fern-like; it is mostly radical on the lower part of the stems. It is a good border-plant. It is very pretty in our rock-garden, where it is planted in a high and open position, so that its large panicles of double white flowers show to great advantage. All the herbaceous Spiræas are easily multiplied by division of the plants.

Cambridge, Mass. *Robert Cameron.*

Fern Notes.

COMPARATIVELY few noteworthy Ferns have been introduced during the past year or two, and most of these are in the line of variations of well-known types. Some, however, prove to be decided improvements, and as such are worthy of more extended cultivation; among these is still another form of the old Ribbon Fern (Pteris serrulata), known as P. serrulata cristata densa, an unfortunately long title for so pretty a Fern. This variety is in the style of P. serrulata Dixonii, but is more compact and profusely crested, the fronds being gracefully arched and of light green color. It will no doubt prove a useful plant for small ferneries, and as the various forms of this species are among the easiest to propagate, a stock may readily be secured.

Pteris Cretica Mayii is not new, though it is not very common; it presents some of the well-known characteristics of the type in its hardy nature and tough foliage. It also is compact in growth, the fronds being short and the pinnæ more or less forked and crested, their color being dark green, with a slight variegation of lighter color down the centre of each division. Pteris Cretica nobilis, also a good form, does not produce as many spores as do some other varieties of this class, and has, therefore, not as yet become so popular a plant as was anticipated, though unquestionably a very serviceable variety.

Some of the newer forms of P. tremula become very attractive plants when carefully grown, and either for conservatory decoration or for exhibition purposes have much value. P. tremula Smithii is one of the best, and the fronds are finely divided and much crested on the tips of all the segments. This variety is, I think, more graceful in habit than P. tremula grandiceps, an earlier crested form of this species, already described in Garden and Forest.

The Adiantums also continue to produce cristate forms, among those of recent introduction being one of A. assimile, the fronds of which are tipped somewhat like those of A. cuneatum grandiceps, and, like that variety, have an an effect both curious and graceful. This form of A. assimile will probably make a useful basket Fern, the type being specially adapted to that method of cultivation.

Pteris Victoriæ is certainly one of the prettiest Ferns of recent introduction. The variegation of its slender fronds is clear and distinct in its markings, while the habit of the plant is neat and graceful. The growth of this species is moderate, and it is well suited for small collections. It enjoys more heat than many other members of the genus, doing well in a temperature of sixty to sixty-five degrees. This is the Fern discovered by Mr. Forstermann in a warm locality in the South Pacific islands during one of his Orchid-collecting tours.

Gleichenia dicarpa longipinnata is one of the most beautiful Ferns, and deserves a place wherever the proper facilities for the growth of these plants exist. It is not new, but as the Gleichenias are usually propagated by division of the rhizomes, their multiplication is naturally slow, and special forms continue somewhat rare. This variety has very long fronds and small pinnæ, and makes a most attractive specimen, but, like nearly all its fellows, G. dicarpa longipinnata thrives best in a moderately cool house.

G. rupestris glaucescens is another useful form, and, like G. dicarpa longipinnata, is of scandent growth, but has much coarser fronds of light green color, and is quite glaucous beneath. It bears some resemblance to G. Speluncæ, but is not so strong a grower, and will flourish with more heat. G. dicarpa frequently bears spores, from which I have sometimes succeeded in raising seedlings, but I have never seen spores on G. Speluncæ.

Holmesburg, Pa. *W. H. Taplin.*

Narcissus poeticus.

THE Rev. G. H. Engleheart, in writing to the *Gardeners' Magazine* of Narcissus poeticus, which brings the Daffodil season to a close, calls attention to the great length of that season. The little Hoop-petticoat Narcissus will flower in England under glass in February, and such precocious kinds as the Golden Spur and Tenby, under the shelter of a south wall, will begin to bloom in the middle of March, while June will find the last of the Daffodils, the Double Poeticus, in bloom. The Pheasant's-eye Daffodil,

or Poet's Narcissus, is cultivated in England by the million in the open ground, especially the early-flowering form, Ornatus, but, well known as it is, it has been strangely neglected by hybridizers. It has been crossed with the Trumpet Daffodils, and the result is apparent in the numberless short-crowned flowers of the Incomparabilis section, but there has been little attempt to enhance the best features of the Poet's Narcissus, as has been done with the Trumpet Daffodils, by intercrossing and selecting seedlings. Just as that splendid plant, the Emperor, is probably only an improved form of the old Narcissus Rugilobus, or R. lorifolius, so a more robust and floriferous race of Poet's Narcissus with red eyes might be secured, and, indeed, has been secured by Mr. Engleheart. He has also obtained flowers with the shapeliness and precocity of the Ornatus varieties, but much increased in size, besides crosses between Ornatus and the late Recurvus, which unite in the same flower the brilliant whiteness and solidity of the latter with the flatly expanded form of the former. But there is abundant room for other workers, and this field is more promising than any other in Narcissus culture, because every seedling of N. poeticus has a vigor, a constitution, if it has no other good quality. Of the cultivation of the Pheasant's-eye Daffodils, Mr. Engleheart says:

In the cultivation of the Pheasant's-eye there are three points which should be kept in mind. First, its great inherent vigor enables the plant to thrive in a much richer soil than is wholesome for most other Daffodils. Broadly speaking, no amount of manure will injure either blossom or bulb. To those who have the common variety, Recurvus, or late single Pheasant's-eye, in their gardens, but grown as it usually is—namely, left alone for years in a half-starved condition in a mixed border—I recommend planting a batch of bulbs in a slip of deeply-dug and heavily manured kitchen-garden ground, and lifting and replanting annually in similar quarters. The change of the flower in dimensions and substance will astonish them; indeed, it becomes a different thing altogether. The second point is that all the Pheasant's-eyes require for their well-being more moisture at their roots than other Daffodils. Therefore, on dry soils it is advisable to give them the moistest corner of the garden, and to take out no sunk alleys between the beds which contain them. Thirdly, and perhaps more important, the Pheasant's-eye ceases from growth for scarcely a week in the year, and cannot be said to have a resting-time for its bulbs. If there comes a dry hot spell of weather while it is in bloom, and heavy rain follows, it will commonly make long fresh roots before the leaves show signs of decay. In any case the bulbs will be found to have started into growth before the end of July. Accordingly, the variety Ornatus should be lifted in June, and the later variety of Poeticus as soon as the foliage turns yellow at the tips—not waiting for its more entire decay. And I advise that Ornatus be replanted before any other Daffodil. It is difficult to injure this robust plant seriously by any treatment, but for the best results let it be planted early.

With regard to existing kinds of Narcissus poeticus, the three best for ordinary purposes of cut bloom are Ornatus, Recurvus and the double Gardenia-flowered. A fourth, N. poetarum, is beautiful with its wholly red eye, but in many soils it is certainly not so robust as the others, nor nearly as floriferous as Ornatus, which blooms from quite small offsets, while N. poetarum blooms only from mature bulbs. The double kind is extremely beautiful when well grown, and most useful in filling a gap between spring and summer flowers. But it has the serious defect of producing a large proportion of empty or "blind" spathes. Many explanations have been given of this habit, and remedies propounded, but I believe no one has been able to conquer it. My own notion is that the plant has exceptional requirements in the way of abundant root-moisture, but that it demands also ample sun-heat at the same time to ripen its growth. This conjunction of conditions is not easily obtained, but it may be said that in open quarters, which have been deeply trenched and liberally manured at the bottom, there will be fewer blind spathes than on shallow hot soils.

Those who grow large collections of Daffodils may include some other Pheasant's-eyes in addition to the above-mentioned. Angustifolius, a slender-growing kind with narrow petals, is in most respects quite inferior to Ornatus, with which it blooms, but it possesses a singularly sweet and refined scent, approaching that of Sandal-wood. Grandiflorus is very large and striking, but increases so slowly that it is difficult to accumulate a stock. Patellaris, or the flat-crowned Pheasant's-eye, is in all probability the single form of the well-known double Poeticus. It is the common wild Poeticus of the neighborhood of Montreux and other continental localities. N. poeticus verus of Linnæus, as it is called in catalogues, is a most beautiful kind, small in blossom, but with a circular flower of solid and overlapping petals. I consider it a most valuable kind for the hybridist, as likely to infuse substance and good shape into some of the larger sorts. Then there are small mountain varieties which are found in Italy, both north and south. That which has been catalogued as Verbanus, or Verbanensis, and takes this title from the Latin name of Lago Maggiore, is so abundant on some north Italian mountain-pastures that I have seen acres of it in one sheet, mingled with the blue Gentianella. It grows but a few inches in height, and seems to resent ordinary garden cultivation, but will live on the rockery or in grass.

Correspondence.

Impressions of America.—II.

To the Editor of GARDEN AND FOREST:

Sir,—Spring found me in one of the loveliest suburbs of Boston, bent on enjoyment of nature and study of this garden problem that exercises such a curious fascination on all who have once come under the charm. Houses and statues, books and pictures are all very well in their way, but their way is often a wearisome one. The conscientious art-critic, for example, is too often doomed to pass hours in the foul air of crowded rooms examining pictures by the hundred which ought never to have been painted. The garden-critic, on the other hand, has at least the solace of fresh air, and if he does sometimes feel that the flowers and shrubs he sees ought never to have been planted in that combination, flowers and shrubs are a good deal easier to re-arrange mentally than pigments. This re-arranging, indeed, gives a great part of the pleasure. If you cannot have really beautiful gardens with passages which at once stir the imagination into joyous activity by the sight of a broad, rolling, tree-flecked stretch of grass, with glimpses of a gleaming lake beyond set off by masses of Rhododendrons, just visible through a depression in the bluffs that hem in the water; or of English roseries, where music seems to float in the fragrance they exhale, and poetry is made visible in the grace and tenderness of their manifold forms; or of arching trellises, suggesting twilight meditation; or of such enchanting floral groups as are made when Tiger Lilies uplift their torches beside tall Irises robed in deep purple—if you cannot have pleasures such as these, at least you see floral beauty, even though it be misplaced, and your imagination will be kindled by the very mistakes and shortcomings you see. It is all so delightfully easy. Your imagination takes fire at the sight of a noble Lilac-bush crushed up against some coarse foliage in a stupid shrubbery, or a round bed of ill-assorted Geraniums lost in the grass, or a flat bed of nondescript color, from "assorted packets" of seed, at the foot of the piazza, or, perhaps, scraggly bands or beds of Tulips in the most trying combinations. You set to work at once setting the Lilac-bush free and making it grow full and round, as nature meant it, taking the Geraniums out of the bed, selecting one or two well-balanced tints of Pansies from among the "assorted" flowers, and filling the bed with them, while the Geraniums are variously distributed; the bright and scarlet and the frozen red ones are separated, put in with Ferns and Lilies-of-the-valley at the kitchen-door; the drooping specimens among the crimson-pink or white ones are planted with deep blue Lobelias and Ferns or Grasses in large pots or tubs, and put on the piazza-balustrade or placed as sentinels on either side of the front steps; the more upright Geraniums are used as a kind of support or setting to the house in the front border, along with Palms and Dracænas and other house-plants that want a summer outing, or among some of the perennials that have the right height and character. As for the Tulips, not one of the discordant ones is allowed to remain. It is all so delightfully easy—so much easier, indeed, to study it all out than to do it actually, and then have no end of care in the apparently simple task of keeping all intrusive tints away. Neither bulbs nor roots nor seeds are kind enough to wear the exact shade of red or purple or pink that their flowers put on in summer. It is the business of head-gardeners and nurserymen to know, though, and to provide their roots or seeds with unambiguous names, referring to a chart of colors, if one can be had, which will prevent their subordinates or customers from making painful mistakes.

The true garden-critic, however, is not hampered by any considerations such as these when in the full swing of re-

constructive fancy. Things grow and arrange themselves at his bidding, and out of a poor little suburban garden, struggling with dust and drought and want of pennies to spend on gardening, he creates a little bower of beauty. And, seriously, I do not think he is altogether so fantastic and unpractical as many people would make him out to be. Take the garden just alluded to, for instance. I admit that Lilac-bushes do not grow into the right shape in a night simply by being set free from contracted surroundings. But in most cases they will correct their own shape in time, and in gardening, as in other things, promise is often as pure a source of joy as fulfillment. You will observe that the other suggestions I made did not entail the laying of a single new bed, except one near the kitchen-door, and a bed of Lilies-of-the-valley and Ferns is not an expensive one. If you do not care to have that bed, you can always find some place to put the rejected Geraniums where their colors do not clash with those of other flowers. It is only a trifle more expensive to buy seeds—for the round bed—of one or two choice varieties of the same flower than it is to buy "assorted" packets. The bed running along the piazza can be managed by degrees. If you get one or two salient points to begin with—say the angles of the steps—the remainder will not disturb you so much, and you can go on gradually, getting nearer and nearer to your ideal till your bed comes fairly up to it, and you can turn your attention elsewhere. There are several cheap ways of filling such a bed as the one we are discussing, if you feel that you would like to keep it, and, by degrees, make it into an appropriate setting for the house to stand in. These beds are not so much the fashion now, and many people seem to hide their flowers carefully out of the way if they have any at all, and yet this flowery setting to the house may be easily made to have a consistent character and pleasing effect. There are many ways of keeping up this character; the one suggested above, of an artistic grouping of indoor plants that are kept over for next winter's use on either side of the piazza-steps, is quite effective, and might be made, with some knack in the grouping, to combine gracefully with the beginning of a herbaceous border. If there are no indoor plants available, and a herbaceous border is what you care most for, some of the perennials might be made to take their place, but, whatever you choose to have, do not let it look as if the piazza-steps were an accident cutting the flower-bed into two disjointed halves; let the flower-bed lead up to, and accentuate, the steps. This, again, can be done in many ways—everything can be done well in more ways than one, if you once set about looking for them. Again, if a herbaceous border be what you are aiming for, there is no reason for trying to convert the whole of the bed along the piazza into a herbaceous border at once; it can be planted bit by bit, filling in the ends with some such things as Mignonette or Poppies. The Mignonette would require a row of Nasturtiums or Scarlet Runners at the back to bind house and border together, and also some kind of a boundary line of Ferns or low Nasturtiums between them and the more elaborate arrangement near the piazza-steps. Either Mignonette or Poppies would allow of a border of Daffodils to make the house look bright in the spring-time.

As for the Tulips, the best plan is to start by buying the right ones; but, in any case, obnoxious ones can be weeded out either by making a little color chart when they are in full bloom, and marking the bulbs accordingly, or simply by tying something to the displeasing ones and discarding the bulbs when they are lifted. All this work of reconstruction is easier to plan than to accomplish, and yet it is much more satisfactory than criticising pictures, for you can continue at this for years and know nothing of art or beauty either. But you cannot begin criticising gardens without learning certain broad lessons in gardening, such as, for instance, that Hollyhocks do not bloom in the spring, and that different plants, in order to look well, must have different surroundings. From this it is only a step to begin to put your theories into practice, and it is this practice of gardening that deserves to be much more widely spread than it is. Gardening in America seems to me a luxury for the wealthy only, and there appears no good reason why this should be so. My first impressions of America in autumn had left me with a vague sense of perplexity at the inconsistency between the glorious woods and the uncared-for front-yards; my spring impressions only served to increase this perplexity. In a country where so much might be done, it is sad to see how comparatively little is done; how few of the residents in these Boston suburbs that I have had an opportunity of observing seem to appreciate the inestimable blessings of gardening as a fine art.

Milton, Mass. *Cealia Waern.*

Is Spraying Overdone?

To the Editor of Garden and Forest:

Sir,—If Dr. Hoskins' opinion (p. 261) is correct,—"that we are doing more spraying in our orchards now than we shall do ten years hence,"—then it must follow that the work of our experimenters and the conclusions of orchard-owners are alike well-nigh valueless, for probably not one orchard-owner in fifty now sprays his trees. In comparatively few communities has spraying yet become sufficiently popular to exert any marked effect upon the fruit-markets, especially of the tree-fruits. Any diminution of this practice must reduce the value of the operation, so far as markets are concerned, to an insignificant margin. My own opinion is decidedly opposed to that of Dr. Hoskins. I am convinced that ten years hence three times more spraying will be done than now; and my faith rests less upon the present work of experimenters than upon the fact that very many of our most acute fruit-growers are ardent champions of spraying. I know of no recent practice in agricultural directions which finds so many earnest advocates among the best farmers as this; and this fact is indisputable proof of the excellence of the operation.

I am willing, and, in fact, anxious, to admit that much indiscriminate spraying is being done, and that some growers will be inclined to discontinue it; but this fact only brings out the more clearly the benefits which result from proper methods. It is also true that some of our insect and fungus invaders are occasionally our friends, but they are most unreliable friends. I cannot trust the codlin-moth to thin my apples; sometimes it thins them until none are left, and sometimes not enough. And if I breed a healthy crop of insects in the year when my fruit is abundant, I am afraid that I shall have too many of these helpers the coming year when my crop may be small. The codlin-moth and apple-scab are expensive allies. The only real benefit which I can get from them is the consolation that they will often ruin the crop of my neighbor who does not spray, and thereby leave the better market for myself who do spray!

It would certainly be effective treatment to "uproot every variety" of Apple which is subject to apple-scab, for then, in western New York, at least, we should have no market apples left, and we should have no occasion for spraying! But we cannot expect to convince our orchardists that it is wise to uproot the Baldwin orchards; they will at once answer that it is cheaper to spray. I own that we should attempt to produce scab-proof varieties, and Dr. Hoskins makes a good point in calling attention to the fact, but until we obtain them we must content ourselves with present varieties and carbonate of copper. We have no proof whatever that crosses with scab-proof varieties will give scab-proof offspring; and the means of obtaining such varieties are not yet known. There are, to be sure, many present varieties which are little affected by scab, but, unfortunately, most of them are not profitable market sorts.

We shall, no doubt, greatly cheapen and simplify the methods of spraying, but the practice, as a whole, is, in my opinion, one of the distinct advancements of modern times in agricultural and horticultural practice.

Cornell University. *L. H. Bailey.*

A Good Example.

To the Editor of Garden and Forest:

Sir,—Last year the attention of your readers was called to the making of a semi-public water and wild garden by Mr. S. C. Nash at Clifton, New Jersey. It will be remembered that this had only recently been a swampy, worthless piece of ground, occupying a depression stretching along the public highway. The hollow had been fed by abundant springs, and nature had full sway for years to establish the various indigenous weeds, which, with the attendant animal life, make such places eyesores when near frequented roads, whose dust adds the last touch of desolation. Such places are only too frequent, and the attempt to convert such a waste into an orderly garden in keeping with the natural conditions of the situation seems so interesting that some report of the progress made may probably be encouraging and helpful to others.

Mr. Nash being an enthusiastic grower of aquatic plants, the first work done was the clearing out of the natural basins and adjusting the borders to which the waters should be confined. After clearing out the grasses and rushes it was found that the bottoms were covered with indigenous water weeds of no beauty, but of very rapid growth, which seemed an almost insuperable bar to further progress. These have been fought persistently for several years, but are still very vigorous,

and probably nothing less than a solid coating of sand as a smother will suppress them entirely. The wild growths which covered the sloping banks have been suppressed by the sand and mold which were used largely in regulating the grades. The upper reaches of the swamp have been regulated, but some of the attractive native growths of Cat-tails, bold Grasses, Arums, Azaleas, etc., have been cleared from encroaching and unattractive things, so as to leave bits of natural beauty in character with such a place. Among these, informal paths lead to quiet pools reflecting many a common and native plant which seem rare beauties in such a setting. The sloping grounds on the southern border have been somewhat cleared, and contain a multitude of Ferns, and are being gradually filled with hardy plants, placed quite informally among the sparse grasses and various creepers which now cover the ground. Some terrestrial Orchids, small Irises, etc., seemed quite in character here. But it is intended to make the water-garden the main attraction. The borders are now quite well filled with Irises (mostly I. versicolor and I. Kæmpferi), Eulalias, Wild Rice, Arundo Donax, Pontederia cordata and Calamus. The main body of water is well stocked with hardy Nymphæas, of which there is a large variety. Some of the established plants were well in flower during my visit. The difficulty Mr. Nash experienced with his first plantings arose from the too abundant supply of cold water. This has been somewhat obviated, but the tender varieties are now grown in large basins formed by driving planks to confine the water, and in which it will become somewhat heated. The margins of these basins are masked by trailers and low-growing plants, while certain islets between them are devoted to grasses and plants with noble foliage.

Like all fanciers of aquatics, Mr. Nash has an ambition to flower Victoria regia, the giant of the Nympheæceæ, and one of the wonders of the vegetable world. While this plant is flowered in this latitude in the open air, its growth is not entirely made there, and somewhat elaborate arrangements are necessary to bring it forward successfully. The plant, being an annual, is started from seed in strong heat, in January or early February, in the greenhouse and kept moving in warmth. As soon as the weather permits it is shifted into its permanent tank—one about thirty feet in diameter being necessary, and is covered with a tight frame with sash. It is necessary to keep the temperature of the tank at eighty degrees and upward and retain the covering until settled warm weather. The heat here was supplied by a stove, with water circulation sunk in a caisson alongside the tank. It is usual, I believe, to use the tank as the expansion tank of the stove, but here the tank was supplied with fresh water led from a greenhouse tank several hundred feet away which passed through the heater. The Victoria flowers in about four months from seed, the quickest-flowering being reported this season by Mr. Brydon of Yarmouthport, Mass., who had flowers in 107 days. Mr. Nash's plants will be in flower next month, and will probably be the only ones to be seen conveniently near New York City. The leaves of the Victoria are wonderful affairs, both in size and structurally. They are uncanny, fleshy-looking objects, but well worth a journey to see. It is a pleasure to be able to record the rapid progress of this park, which, while projected for private pleasure, is really a public improvement worth copying, especially where such waste places are prominent near traveled roads.

Elizabeth, N. J. *J. N. G.*

Periodical Literature.

In *Harper's Magazine* for June there is an attractive article upon eastern Peru, written by Mr. Courtenay De Kalb, which shows how artistic, in its works of industrial art, a semi-savage race can be, and also how large a part the Palm-tree plays in these arts in the countries where it grows.

North-eastern Peru, which is called the Montaña, or "wooded country," has been brought more into contact with the outer world since the opening of the Amazon River to the traffic of all nations in 1866. But its white population, chiefly of Portuguese origin, has not yet "attempted entrance upon the domain of the arts." The landed proprietors, living in close association with troops of Indian agricultural laborers, have but sparingly introduced "the picturesque into their architecture, although the Portuguese type of structure, creeping up the river from Brazil, has feebly asserted itself as far as the materials at hand will allow," and the Spanish idea appears also in certain spots. "Here are the great porches and balconies, the open galleries letting a bit of light through the corner of the house, just under the red-tiled roof, and the pretty inner court, or patio, filled with tropical verdure." But "the pollen of Indian influence has modified exotic taste at times, where the house resembles the Palm-thatched quincha, or native hut, and is decorated on the interior with Palm-leaf mats fastened upon the walls with the horizontally fluted Huicungo palm-posts at the doorways, and above them gratings of Palm-slats lashed together by vines, forming combinations of grace well worthy of imitation in other lands. Upon extraordinary occasions, when a dinner is to be given, they bring from the forests masses of the long green fronds of the Palm, vines all aflame with pink and scarlet blossoms, and the rich umbrella-shaped Paw-paw, and convert the banquet-room into a bower of fairy-like beauty."

As regards the minor arts, the writer says: "The common Indian is but a savage with some of the tricks of civilization, a house-builder, a planter of Maize and Yucca, a weaver of cloth and of hammocks, a fashioner of works of fictile art of surprising beauty. Without turn-table, simply by a feeling for correct form, are these jars, urns, dishes built up by hand with wooden spatulas. The decoration has become thoroughly conventionalized, crystallized, in fact, into a type of æsthetic expression which may truly be designated art. Predominant is the old classic form of fret and chevron, executed in subdued reds and deep browns upon a gray or creamy ground. Sometimes the leading design is in very heavy lines, with the ground filled in with an exquisitely delicate tracery of similar patterns. The plant-life of the forest is also reproduced—vines, not rudely delineated, but forming definite curves, springing upward at the end of the pattern and expanding into the calyx which holds the conventionalized type of a corolla, now a yellow five-rayed star, again a pink-flushed Lily's cup, or a sky-blue pendent bell. The artistic spirit displayed in these recalls the wonderful works of Inca art exhumed at the noted necropolis of Ancon. The Indian, again, manifests his appreciation of graceful form in the rounded ends of his quincha, which give an effective curve to the palm-thatched roof."

Recent Publications.

The third annual report of the Missouri Botanic Garden makes a handsome volume of one hundred and seventy pages and contains fifty-seven full-page plates. It contains the report of the President of the Board of Trustees, the director's report showing the progress of renovating the old garden and of extending and improving it, and telling of the development of the library and herbarium and of the school of botany, all of which, through the magnificent endowment of this establishment, are fast becoming of great importance and seem destined to make St. Louis the botanical headquarters of the New World.

Mr. Shaw, under his gift, has provided that a flower sermon should be preached annually in St. Louis and that the trustees of the Garden should give an annual banquet in honor of his memory, as well as a second banquet intended to bring persons interested commercially in plant-culture together. This volume contains the second of the annual flower sermons preached this last year by the Rev. Montgomery Schuyler, the proceedings at the second annual banquet which was given by the trustees on May 21st of last year at which the Secretary of the Interior was the guest of honor, and also the proceedings at the second annual banquet to gardeners, florists and nurserymen, given on the 10th of November.

Of more permanent interest to students of science are the scientific papers appended to the volume; these are Professor Trelease's *Revision of the American Species of Rumex*, occurring north of Mexico, to which mention has already been made in these columns, a paper by Professor Riley on the *Yucca Moth and Yucca Pollination*, also illustrated, and Professor Trelease's *Notes and Observations on the Genus Yucca*, which he has been engaged in studying in the field during the past winter. These notes are illustrated from sketches originally made by Dr. Engelmann, depicting the floral and capsular structure of several of the species which had never been adequately figured, which Professor Trelease had the happy idea to have redrawn in ink and then published by a process of photo-engraving. These sketches of Dr. Engelmann are supplemented by reproductions of photographs showing the habit and growth of several species which are here, in some cases, better portrayed than we have seen them elsewhere.

This volume, whose contents we have thus cursorily sketched, can be obtained at the cost of the publication ($1.00) from A. E. Foote of Philadelphia, Wesley & Son of London, and of R. Friedländer & Sohn of Berlin; while applications for the purchase or exchange of either of the reports of the

Garden or of separate papers issued by its officers may be addressed to Professor William Trelease, the director at St. Louis.

Notes.

At a recent floral festival of the Linnæan Society of Jamaica, Long Island, one table contained seventy-five different varieties of wild plants in flower which were collected in the immediate vicinity, most of them rooted in pots. It was observed that this collection was the most attractive one in the exhibition, although the display of cultivated flowers was very showy.

A fortnight ago, New Hampshire's first state park was dedicated. This reservation consists of five acres of mountain-top on the elevation known as Pack Monadnock, in the southern part of the state. The elevation of the park is 2,385 feet, rising abruptly from the surrounding plains. The dome of the State House in Boston and the peak of Mount Washington are visible from the boulder which crowns the plateau. The land is the gift of private citizens.

No garden at this season is complete without the stately beauty of the Foxglove. Occasionally we see these plants massed together in a bed, but they lose nearly all their effectiveness in this way. They need to stand singly or in loose groups on the borders of a shrubbery or in some other place where their tall and graceful spires can be outlined against a green background. All of the colors through which they range are good, but a certain number of white ones are indispensable for the best effect.

Mr. Joseph Meehan writes us that in one of the open meadows at the National Cemetery in Arlington he recently noticed a specimen of Quercus falcata with a trunk measuring twelve feet in circumference. At about seven feet from the ground it branched into great limbs which reached out horizontally until they shaded a circle one hundred feet in diameter. There are many natural groves of White, Red and Black Oaks at Arlington. There are also some admirable evergreen Magnolias near the old dwelling and a good Cryptomeria; Deodar Cedars also thrive well here.

Zinc labels have been recommended for trees, and the prescribed practice has been to roll the labels simply around a branch, with the idea that as the wood grew the label would be expanded and the bark would not be cut. *Meehan's Monthly* says that this is an error, and asserts that the branch will grow over and around the label even when it simply rests on the upper part of the branch by its own weight. It is added that the only way to prevent any label or wire from growing into the bark of a tree is to attend to it every year or so and loosen it so that there is plenty of room for the wood cells to form.

In an article about Richard Jefferies, whose delightful books upon English rural scenes we have often quoted, a recent writer in *Literary Opinion* tells of a visit she had just paid to his parents who have been living for some years in Bath. She found his father, she says, "a healthy, good-looking man of seventy-five years of age, evidently the prototype of the Farmer Iden of 'Amaryllis,' and his mother a small woman of seventy-three, an invalid." They talked freely about "Dick," telling how he was always "sitting in the window, writing with a piece of pencil"; but they had read few of his books, had no conception of his fame in the world, and marveled much that for his sake they should be objects of interest to strangers.

In a late bulletin from the Agricultural Experiment Station, California, Professor Hilgard records some investigations made on prunes, apricots and peaches with a view to ascertain the proportion of pits to flesh, juice to flesh and sugar contents of the juice, and the flesh of different varieties. In regard to the nutritive value of certain fruits it has been stated in former bulletins that the orange in California rated the highest, but these researches give the apricot an equal rank, while the prune follows next, with grapes, bananas, apples and pears succeeding each other probably in the order named. Grapes stand first among the fruits in the quantity of mineral matter they take from the soil. The apricot, taken according to weight, holds the second place in this respect, while the prune and the orange come third.

In his recently published book, called, "With Poets and Players," in a chapter devoted to "Botany on the Boards," Mr. W. D. Adams says: "Great progress has been achieved of late years in the art of making stage trees and shrubs and flowers seem natural and convincing. In theatrical arboriculture in particular great strides have been taken. It is nothing new to find the centre of the scene occupied by what, to all appearance, is a genuine tree, with real trunk, arms, leaves and blossoms. In these respects the stage mechanists of to-day can almost, if not quite, deceive the eye. . . . But such triumphs of the imitator's skill do but serve too often to show up in brilliant relief the unreality of the mock stone and wood surroundings in the way of house or fence. And too often, indeed usually, the stage-tree is only too obviously of the stage, stagey."

There are so many beautiful kinds of Lilies, each with a charm of its own, that it would be hardly just to single out one and pronounce it more beautiful than all the rest. But certainly it would be hard to name one that excels in good qualities the old-fashioned Ascension Lily (Lilium candidum), which has been cultivated probably as long as any other flower known in gardens. The disease which has injured it for some years past seems to have run its course; at least, these Lilies were never more luxuriant or the flowers more perfect than they have been this year. A mass of these flowers in full bloom, with some dark green foliage behind them, is a beautiful spectacle, and so is a group of them mixed with the tall blue spikes of the perennial Delphiniums. Hardy Lily-bulbs are usually planted in the autumn, but the bulbs of this one should be lifted in late July or early August and planted at once. At that time the stalks have died down, and soon after new roots begin to put out, and some glossy radical leaves spread over the ground and remain green all the winter. The bulbs should be planted before this new growth starts, or there will be a great loss in the vigor of the plant's growth.

The last number of *Forest Leaves* contains an interesting illustration, entitled, "A Historic Tree in Transit," and it represents a tree, seventy feet long and thirty-six inches in diameter, placed on a platform and moved along on rollers by block and tackle. The tree itself has a historic value, as it is an offshoot of the great Penn Treaty Elm which stood in Philadelphia. This tree measured twenty-four feet around the base, and one branch of it was one hundred and fifty feet long. It blew down in 1810, and a shoot which came up from the roots of the old tree was carried to the Oliver estate at Bay Ridge, New York, where it has stood for more than fifty years. This is the tree which was removed from there to the grounds of General Paul A. Oliver of Forest Roads, Oliver's Mills, Pa., whose ancestors owned the ground on the Delaware where the Treaty Elm stood. It was a bold undertaking to move so large a tree for 175 miles, especially since it had to be moved by horse and hand-power at the beginning and end of the route. General Oliver wrote on the 20th of June that the tree seems to be growing well and promises to thrive in its new home on the mountain-side as well as it did by New York Bay.

That portion of France which is called the Midi (the South), says Monsieur de Vilmorin, in his recently published book on *The Flowers of Paris*, includes all the territory lying south of Orange, and, consequently, the lower valley of the Rhone and the borders of the Mediterranean; but the term is more specially applied to the French portion of the Genoese coast between Hyères and Vintimille. This region is the great winter flower-garden of Paris, and, indeed, of a very large part of Europe. And its special adaptation to the winter cultivation of flowers is thus explained: "The peculiar climate depends upon several causes. In the first place, heat is persistent, as solar action is interfered with by clouds only one day in four. Then mildness is preserved in the valleys by the fact that they do not open directly upon the sea, but approach it obliquely; and thus, of course, the hills which lie between them and the sea are well exposed to the south and offer very favorable locations for plants which require a great deal of heat. This disposition of valleys and hills protects them almost completely against the cold winds of the north, and especially against the mistral, which, a little farther northward, destroys all delicate plants. On the other hand, the wind which blows from the sea, bringing with it the warmth of the African shore, finds no obstacle, and the immediate vicinity of the sea always equalizes the temperature of a country. . . . A particular characteristic of cultivation in the Midi," adds the author, "is the great use made of protective coverings; for the same reasons which cause the great heat of the day also produce great chilliness at night. The sky always being very pure, nothing opposes the radiation of the soil and its plants, and, therefore, these last have always been covered by coarse mats of reeds, which may also serve to protect delicate flowers from the burning rays of the sun. Recently, however, glazed sashes have come into use, and are now almost universally employed instead of the mats, being heated, except in rare instances, by nothing save the rays of the sun itself."